SYLLABUS DEVELOPMENT GUIDE

AP® Statistics

The guide contains the following information:

Curricular Requirements

The curricular requirements are the core elements of the course. A syllabus must provide explicit evidence of each requirement based on the required evidence statement(s).

Required Evidence

These statements describe the type of evidence and level of detail required in the syllabus to demonstrate how the curricular requirement is met in the course.

Note: Curricular requirements may have more than one required evidence statement. Each statement must be addressed to fulfill the requirement.

Samples of Evidence

For each curricular requirement, three separate samples of evidence are provided. These samples provide either verbatim evidence or clear descriptions of what acceptable evidence could look like in a syllabus. In some samples, the specific language that addresses the required evidence is highlighted in **bold** text.

Curricular Requirements

Curricular Requirement 1

Students and teachers have access to a college-level statistics textbook or resource in print or electronic format.

Required Evidence

☐ The teacher must select or provide a college-level statistics textbook or resource.

Samples of Evidence

1. The teacher selects a pre-approved college-level statistics textbook or resource.

2. The teacher provides the title and author of a college-level statistics textbook or resource.

Curricular Requirement 2

The course provides opportunities for students to interpret standard computer output and use approved graphing calculators with statistical computational capabilities to describe data, determine probabilities, and perform tests.

Required Evidence

☐ The syllabus must include a brief description of one or more classroom activities, assignments, or projects in which students interpret standard computer output in at least one topic.

AND

The syllabus must include a brief description of one or more classroom activities, assignments, or projects in which students use approved graphing calculators in at least one topic.

Note: Approved graphing calculators are outlined in the AP® Exams Calculator Policy. Throughout the school year, students may use the web-based or app-based Desmos graphing calculator in place of or in addition to a handheld graphing calculator.

Samples of Evidence

1. Students will be given a computer output of summary statistics for univariate data and will be asked to describe the distribution including shape, center, spread, and testing for outliers. Students will use the summary statistics to make a boxplot of the data.

   Students will use their graphing calculators to find a test statistic and p-value for a hypothesis test and discuss with a peer the meaning of the p-value and the conclusion that should be drawn based on a specific significance level.

2. Students will be assigned homework questions that require the use of a graphing calculator to create plots, calculate probabilities, construct intervals, and perform tests of significance. Additionally, a comprehensive statistical project will be assigned that requires students to use available software to generate, display, and interpret standard computer output relating to inferential computations.

3. Students use the graphing calculator regularly throughout the year to construct plots, calculate probabilities, find the least-squares regression line, construct confidence intervals, and perform tests of significance. The textbook used presents computer output that students are required to understand in order to answer the homework questions.

Curricular Requirement 3

The course provides opportunities to develop student understanding of the required content outlined in each unit described in the AP Course and Exam Description (CED).

Required Evidence

The syllabus must include an outline of course content by unit title or topic using any organizational approach to demonstrate the inclusion of required course content.

Note: If the syllabus demonstrates a different approach than the unit outline in the fall 2026 CED, the syllabus must indicate where the required content of each unit in the CED will be taught.

Samples of Evidence

1. The syllabus includes a list of the following units listed in the CED:

   - Unit 1: Exploring One-Variable Data and Collecting Data
   - Unit 2: Probability, Random Variables, and Probability Distributions
   - Unit 3: Inference for Categorical Data: Proportions
   - Unit 4: Inference for Quantitative Data: Means
   - Unit 5: Regression Analysis

2. The syllabus explicitly lists the titles of textbook chapters that cover all the required topics in the CED. The syllabus includes a list of the following units listed in the CED:

   - Exploring One-Variable Data (CED Unit 1)
   - Exploring Two-Variable Data (CED Units 2 and 5)
   - Collecting Data (CED Unit 1)
   - Probability, Random Variables, and Probability Distributions (CED Unit 2)
   - Sampling Distributions (CED Units 2, 3, and 4)
   - Inference for Categorical Data: Proportions (CED Unit 3)
   - Inference for Quantitative Data: Means (CED Unit 4)
   - Inference for Categorical Data: Chi-Square (CED Unit 3)

3. The syllabus presents an approach that treats Unit 5: Regression Analysis as a natural extension on one-variable exploration.

   - Unit 1: Exploring One-Variable Data and Collecting Data
   - Unit 2: Probability, Random Variables, and Probability Distributions
   - Unit 3: Inference for Categorical Data: Proportions
   - Unit 4: Inference for Quantitative Data: Means
   - Unit 5: Regression Analysis

Curricular Requirement 4

The course provides opportunities for students to develop the skills related to Statistical Practice 1: Formulate Questions, as outlined in the CED.

Required Evidence

☐ The syllabus must include a brief description of one or more classroom activities, assignments, or projects in which students determine an investigative question for a statistical study to demonstrate a skill from Statistical Practice 1.

Note: The activity, assignment, or project must be labeled with the corresponding skill.

Samples of Evidence

1. Smelling Parkinson's: show students news clip from CBS News, and discuss the idea of a person being able to detect a disease based on smell. **Discuss the question researchers wanted to answer (1.A),** how researchers designed an experiment to gather data and draw conclusions based on the data they collected, and simulations conducted of the same experiment.

2. Students complete an activity where they conduct a statistical study and **formulate an investigative statistical question (1.A).** In small groups, students read each other's questions and discuss possible improvements.

3. Students complete an activity where they read a research article, **state the investigative questions (1.A),** and clearly define the interested variables as well as their measurement.

Curricular Requirement 5

The course provides opportunities for students to develop the skills related to Statistical Practice 2: Collect Data, as outlined in the CED.

Required Evidence

☐ The syllabus must include a brief description of one or more classroom activities, assignments, or projects in which students identify and justify methods for collecting data to demonstrate a skill from Statistical Practice 2.

Note: The activity, assignment, or project must be labeled with the corresponding skill(s).

Samples of Evidence

1. Response Bias Project:
   Students will **design** and conduct an experiment to **identify** and investigate the effects of response **bias** in surveys **(2.A)**. Students can choose their own topic, but must design the experiment. The project should **explain how/where/when you collected your data, and from whom (2.B)**.

2. The students will be assigned a project where, given a statistical study and relevant question, they: a) **identify the observational units, variables, or parameters of the study (2.A),** b) **formulate and justify an ethical sampling scheme or experimental design** to address the question **(2.B)**, and c) **identify and describe the appropriate statistical inference methods** they plan to use to answer the question **(2.C)**.

3. The course includes a project in which **students will describe an appropriate method for collecting data using sampling or experimentation (2.B)**.

Curricular Requirement 6

The course provides opportunities for students to develop the skills related to Statistical Practice 3: Analyze Data, as outlined in the CED.

Required Evidence

☐ The syllabus must include a brief description of one or more classroom activities, assignments, or projects in which students construct representations of data and calculate numerical statistical outputs to demonstrate a skill from Statistical Practice 3.

Note: The activity, assignment, or project must be labeled with the corresponding skill(s).

Samples of Evidence

1. Students will complete a comprehensive project or series of projects that involves **making graphs (3.A), calculating summary statistics (3.B), as well as performing significance tests or confidence intervals (3.E).**

2. Students will complete a group activity on calculating binomial probabilities using simulation, the binomial distribution directly, and the normal approximation to the binomial distribution. Given the problem setups and probability questions, students will use available technology to simulate sequences of coin flips and **estimate probabilities using the distribution of simulated sequences (3.C), calculate the exact probabilities from the binomial distribution (3.C), and calculate probabilities using the normal distribution approximation (3.C, 3.D)**. Students will then be asked to assess the quality of the estimates/approximations and the effect that different success probabilities and number of trials have on the estimates/approximations.

3. From the collected data, students are required to **calculate summary statistics (3.B) and construct an appropriate graph (3.A)**.

Curricular Requirement 7

The course provides opportunities for students to develop the course skills related to Statistical Practice 4: Interpret Results, as outlined in the CED.

Required Evidence

☐ The syllabus must include a description of one or more classroom activities, assignments, or projects in which students interpret results and justify conclusions with statistical inference procedures and methods to demonstrate skill 4.E, 4.F, or 4.G.

Note: The activity, assignment, or project must be labeled so that the corresponding skill(s) are evident.

Samples of Evidence

1. Students will be given data about two distributions and asked to compare them. They will **check conditions to justify the appropriateness of finding a confidence interval** for the difference in the population means of the two distributions **(4.E)** and **justify a claim based on a confidence interval (4.G)**.

2. Example: Given a back-to-back stem-and-leaf plot of a random sample of 40 ninth graders and a random sample of 35 twelfth graders, and the number of minutes each spent studying for their midyear exam in math, compare the distributions in context. **Construct a confidence interval for the difference in mean** time spent studying for their midyear math exam for all ninth graders and twelfth graders **(4.E and 4.F)**. **Based on the confidence interval, determine if there's a difference in the mean** number of minutes spent studying for their math midyear between students in the two grades **(4.G)**.

3. The syllabus includes a project or class activity in which students are required to **interpret confidence intervals or *p*-values from significance tests (4.F)** and **draw conclusions for the investigative questions based on the statistical inference results (4.G).**